

What is claimed is:

1. A method of identifying a composition, a compound, or  
5 a procedure which can produce a skin response in a  
subject, comprising:
  - a) administering said composition or compound, or  
applying said procedure to the transgenic mice  
which express endogenous epidermal stem cell  
factor; and
  - 10 b) analyzing the skin of said transgenic mice for  
response.
2. The method of claim 1, wherein the composition or  
15 compound can be administered orally or by injection.
3. The method of claim 1, wherein the composition or  
compound can be administered topically by contacting  
the composition or compound with the skin of the  
20 transgenic mice.
4. The method of claim 1, wherein the procedure is not  
previously known.
- 25 5. The procedure identified by the method of claim 1.
6. The method of claim 1, wherein the skin response is  
inflammation, tanning, melanoma, carcinoma or  
hyperpigmentation.
- 30 7. The method of claim 1, wherein the composition may be  
cosmetics, medications or skin care products.
8. The method of claim 1, wherein the composition or  
35 compound is not previously known.
9. The composition or compound identified by the method

of claim 1.

10. A mixture for production of a skin response comprising an effective amount of the composition or compound identified by the method of claim 1 and a suitable carrier.
11. A method of identifying a composition, a compound, or a procedure which can reduce skin response in a subject, comprising:
- a) administering said composition or compound, or applying said procedure to the transgenic mice which express endogenous epidermal stem cell factor and which had been induced to produce a skin disease; and
- b) analyzing the skin of said transgenic mice to determine the reduction of skin response, wherein the reduction of skin response indicates that the composition, compound, or procedure can reduce skin response.
12. The method of claim 11, wherein the composition or compound can be administered orally or by injection.
13. The method of claim 11, wherein the composition or compound can be administered topically by contacting the composition or compound with the skin of the transgenic mice.
14. The method of claim 11, wherein the procedure is not previously known.
15. The procedure identified by the method of claim 11.
16. The method of claim 11, wherein the composition or compound is not previously known.

17. The composition or compound identified by the method of claim 11.
- 5 18. A mixture for reducing skin response comprising an effective amount of the composition or compound identified by the method of claim 11 and a suitable carrier.
- 10 19. The method of claim 11, wherein the skin response is inflammation, tanning, melanoma, carcinoma or hyperpigmentation..
- 15 20. The method of claim 19, wherein the hyperpigmentation is natural occurring hyperpigmentation or post inflammatory hyperpigmentation.
- 20 21. The method of claim 19, wherein the inflammation is associated with human hyperpigmentation, or human hypopigmentation.
- 25 22. A method of identifying a composition, a compound, or a procedure which can reduce radiation damage to the skin of a subject, comprising:
  - a) administering said composition or compound, or applying said procedure to the skin of the transgenic mice which express endogenous epidermal stem cell factor;
  - 30 b) subjecting the skin of said transgenic mice and the skin of the control transgenic mice; and
  - c) analyzing the effects of said composition, compound, or procedure on reducing skin radiation damages.
- 35 23. The method of claim 22, wherein the composition or compound can be administered orally or by injection.

- 5 24. The method of claim 22, wherein the composition or compound can be administered topically by contacting the composition or compound with the skin of the transgenic mice.
25. The method of claim 22, wherein the procedure is not previously known.
- 10 26. The procedure identified by the method of claim 22.
27. The method of claim 20, wherein the composition or compound is not previously known.
- 15 28. The composition or compound identified by the method of claim 22.
- 20 29. A mixture for reducing skin radiation damages comprising an effective amount of the composition or compound identified by the method of claim 22 and a suitable carrier.
- 25 30. The method of claim 22, wherein the radiation is ultra-violet light.
31. The method of claim 22, wherein the radiation damage is tanning, carcinogenesis, photo-aging, photo-damage or the development of melanoma.
- 30 32. The method of claim 11, wherein the subject is a mouse or a human-being.
- 35 33. The method of claim 32, wherein the epidermal stem cell factor transgene encodes either a membrane bound epidermal stem cell factor or a membrane/soluble epidermal stem cell factor.

34. The method of claim 33, wherein the epidermal stem cell factor transgene encodes a membrane or soluble epidermal stem cell factor.
- 5 35. The method of claim 34, wherein the epidermal stem cell factor transgene is cloned into a construct containing a human cytokeratin 14 promotor.
- 10 36. The method of claim 35, wherein the human cytokeratin 14 promotor causes the expression of the stem cell factor transgene in murine skin of the basal layers of the interadnexal epidermis and the follicular epithelium.
- 15 37. The method of claim 33, wherein the skin response of the transgenic mice can be induced by applying an irritant or an allergic dermatitis inducing agent to said skin.
- 20 38. The method of claim 37, wherein the irritant is croton oil or dinitrofluorobenzene.
- 25 39. The method of claim 38, wherein the croton oil or dinitrofluorobenzene are applied to the ear or the abdominal skin of the transgenic mice; wherein the abdominal skin is either hairless or shaved.
- 30 40. The method of claim 39, wherein the croton oil is used at a concentration of 0.2 percent.
- 35 41. The method of claim 38, wherein the dinitrofluorobenzene is used at a concentration of 0.5 percent in a 4:1 mixture of acetone and olive oil.
42. The method of claim 11, wherein the reduction or treatment of hyperpigmentation is determined by

electron microscopic analysis.

43. The method of claim 11, wherein the compound is an epidermal stem cell factor inhibitor.

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44. The method of claim 43, wherein the stem cell factor inhibitor is a monoclonal antibody.

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45. The method of claim 44, wherein the monoclonal antibody is ACK2.

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46. A pharmaceutical composition for treating human skin diseases, comprising (a) a compound that can treat skin diseases of the transgenic mice which express endogenous epidermal stem cell factor, and (b) a suitable carrier, wherein the compound specifically targets the epidermal stem cell factor or its receptor.

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47. The pharmaceutical composition of claim 46, wherein the compound is ACK2.

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